

pl. cxxxv., 1776), was subsequently described as *G. elegans* by Geoffroy St. Hilaire. Although this view had been considered and rejected by Geoffroy, it was revived interrogatively by Gray and accepted as a certainty by Thomas and Wroughton. I think Geoffroy was right in dismissing the Vansire of Buffon as an indeterminate species. Mivart (P. Z. S. 1882, p. 189) was probably nearer the truth than Gray, Thomas, and Wroughton when he suggested that it might be a species of *Salanoia* (*Hemigalidia*), adding that "had it been *Galidia* the black-ringed tail would surely have been indicated."

The absence of the caudal annuli in Buffon's figure, as well as the description of the general coloration of the Vansire, make it impossible to regard this ambiguous animal as even probably, much less certainly, identical with Geoffroy's *Galidia elegans*. The familiar specific name of this animal must, therefore, in my opinion, be allowed to stand, and the Vansire of Buffon, with *galera* attached to it, be relegated to the limbo of mammalian species unidentifiable at the present time.

EXPLANATION OF PLATE VII.

- Fig. 1. *Galidictis eximius*, sp. n.
 Fig. 2. *Galidictis ornatus*, sp. n.
 Fig. 3. *Mungotictis vittatus*, Gray.
 Fig. 4. *Mungotictis substriatus*, sp. n.

XIX.—On the African Shrews belonging to the Genus *Crocidura*.—IV. By GUY DOLLMAN.

[Continued from p. 80.]

Group 8 (*fischeri*).

Size medium. Colour above very pale grey, light cinnamon, or cinnamon-brown, below white or greyish white. Tail incrassated at base. Second and third upper unicuspsids about equal in size.

(38) *Crocidura deserti*, Schwann.

Crocidura deserti, Schwann, P. Z. S. p. 103 (1906).

Size as in *hindei*, very pale in colour, paler than *butleri*. Colour of dorsal surface pale snuff-grey, general effect about as in "light drab," the ground-colour being "light

mouse-grey" sprinkled with "light cinnamon-drab," the tint considerably more cinnamon than in *smithi*, but equally pale. Colour on flanks passing fairly abruptly into the white of the ventral surface; hairs of belly with slate-grey bases and white or yellowish-white tips. Lateral gland small, marked by a patch of short white hairs. Backs of hands and feet white. Tail not very long, stoutly built, covered above and below with short white hairs; bristle-hairs fairly numerous, but not very conspicuous, evenly distributed over basal two-thirds. The skins in the Collection show a certain amount of colour-variation, some specimens being rather more strongly tinged with cinnamon, but never as brown as in *butleri*.

Skull about equal in length to that of *hindei*, with a rather larger brain-case. Interorbital region as in *hindei*, not so parallel-sided as in *butleri* or *smithi*. Teeth normal, the small upper unicuspid about equal in size; anterior cusp of large upper premolar not extending past the posterior border of third unicuspid. Last upper molar smaller than in *butleri*.

Dimensions of the type and six adult specimens (measured in the flesh) :—

	Head and body.	Tail.	Hind foot.	Ear.
	mm.	mm.	mm.	mm.
♂ (type). Molopo	92	46	14	12
♂+ . "	93	54	14	12
♂. Okwa	91.5	53	15	11
♂♂. "	95	53	15	12
♂+ . "	86	50	14	11.5
♂+ . "	92	43	14	11.5
+ . "	93	52	14	11

Skull of type: condylo-incisive length 24.9 mm.; greatest breadth 10.3; least interorbital breadth 4.6; length of palate 10.2; postpalatal length 11; greatest maxillary breadth 7.8; median depth of brain-case 5.8; length of upper tooth-row 10.4.

Hab. Molopo River, west of Morokwen, Bechuanaland.

Type. Adult male. B.M. no. 4. 10. 1. 62.

The exceptionally pale colouring immediately distinguishes this Bechuanaland shrew from the allied species. The Somali *smithi*, though equally pale, is more slaty in colour and possesses a smaller and flatter skull, with narrower, more parallel-sided interorbital region, and with the second and third upper unicuspid crushed closely together, the anterior cusp of the large premolar partially concealing the third externally.

(39) *Crocidura butleri*, Thos.

Crocidura butleri, Thomas, Ann. & Mag. Nat. Hist. (8) vol. viii. p. 375 (1911).

A medium-sized pale-coloured species, with short, white, incrassated tail.

Fur rather short, hairs of back about 4 mm. in length.

Colour above grey, washed with pale yellowish cinnamon, general effect as in "drab" mixed with "wood-brown," paler than in any other species excepting *deserti*, *fischeri*, and *smithi*. Flanks greyish washed with yellow. Lateral gland white. Underparts not sharply contrasted with upper, the cinnamon tint gradually fading on the flanks and passing imperceptibly into the creamy-grey of the ventral surface; hairs of belly grey with creamy-white tips. The yellowish tinge on the underparts is possibly due to some secretion from the lateral glands, the areas around which are stained pale lemon-yellow. Backs of hands and feet white. Tail short, very thick and blunt, white above and below; bristle-hairs long and fairly numerous, but rather inconspicuous.

Skull smaller than in *hindei*, with narrower, more parallel-sided, interorbital region; brain-case rather flatter. Teeth similar in shape but slightly smaller, small upper unicuspid about equal in size, cusp of second rather longer than that of third.

Dimensions of the type (measured in the flesh):—

Head and body 78 mm.; tail 34; hind foot 13; ear 10.

Skull: condylo-incisive length 23·9; greatest breadth 10; least interorbital breadth 4·3; length of palate 9·9; postpalatal length 10·9; greatest maxillary breadth 7·5; depth of brain-case 5·3; length of upper tooth-row 10·4.

Hab. Between Chakchak and Dem Zubeir, Bahr-el-Ghazal.

Type. Adult male. B.M. no. 8.4.2.10.

This species is at once recognized by its pale colour and short incrassated tail.

(40) *Crocidura percivali*, sp. n.

Related to *butleri*, but distinguished by its much darker colour, longer tail, and smaller teeth.

Colour above dull cinnamon-brown, between "Prout's brown" and "raw umber," gradually paling on the flanks and passing rather imperceptibly into the greyish white of the belly; hairs of underparts with slaty bases and greyish-white or buff tips. Lateral gland conspicuously marked by a streak of short white hairs. Both above and below this

shrew is considerably darker than *butleri*, resembling more the Charnia River species, *beta*, described above, but with less definition between the brown upper parts and greyish-white belly. Backs of hands and feet dirty white. Tail very thick at base, longer than in *butleri*, brownish above, white below; bristle-hairs not numerous, white.

Skull a little smaller than that of *butleri*. Tooth-row shorter, teeth rather narrower, the second and third upper unicuspid smaller and more oval in transverse section, third slightly overlapping second, but not so crushed together as in *smithi* nor hidden externally by the anterior cusp of the large premolar.

Dimensions of the type (measured in the flesh) :—

Head and body 84 mm.; tail 47; hind foot 12.5; ear 11.

Skull (brain-case broken): length of palate 9; least inter-orbital breadth 4.2; greatest maxillary breadth 7.4; length of upper tooth-row 9.2.

Hab. Jombeni Range, Nyeri District, British East Africa. Altitude 3500 feet.

Type. Adult male. B.M. no. 12.7.1.61. Original number 875. Collected on October 8th, 1911, by A. Blayney Percival, Esq., and presented by him to the National Collection.

The longer tail, darker colour, and smaller teeth separate this species from the Bahr-el-Ghazal *butleri*.

It is with pleasure that I name this new form after Mr. Blayney Percival, the collector and donor, to whose generosity the Museum is greatly indebted.

(41) *Crocidura fischeri*, Pag.

Crocidura fischeri, Pagenstecher, Jahrb. Wiss. Anst. Hamburg. p. 34 (1885).

A pale grey-coloured species, with white extremities and tail.

Size medium, tail rather short.

Colour above slaty grey washed with pale brown, near "mouse-grey," rather darker than in *smithi*. Underparts and extremities white. Tail fairly thick, whitish, a trifle darker on the dorsal surface.

Skull much larger than in the allied species, small upper unicuspid crushed together almost as much as in *smithi*, the anterior cusp of the large upper premolar partially hiding the third upper unicuspid when viewed laterally, second and third upper unicuspid about equal in size.

Dimensions of the type (as given by Pagenstecher) :—

Head and body 92 mm.; tail 48.

Skull: length 26 mm.

Hab. Nguruman, German East Africa.

The only specimen of *fischeri* in the Museum Collection is too young to be of any use for systematic work.

This species is evidently a close ally of *smithi*, from which it may be distinguished by its rather darker colour and larger skull.

(42) *Crocidura voi*, Osg.

Crocidura voi, Osgood, Field Mus. Nat. Hist. Publication 143 (Zool. Ser.), vol. x. no. 3, p. 18 (1910).

A pale grey-coloured shrew, with light underparts, closely allied to *fischeri*.

Size about as in *fischeri*.

Colour of dorsal surface described as "slaty"; underparts "dull yellowish or greyish white below, the light and dark areas quite sharply contrasted." Backs of hands and feet white. The colour is therefore very like that of *fischeri*, the underparts not quite so white and the dorsal surface not tinted with pale brownish.

Skull "long and narrow"; teeth large.

Dimensions of the type (as given by Osgood) :—

Head and body 90 mm.; tail 46; hind foot 14.5.

Skull: greatest length 24.2; greatest breadth 9.7; maxillary width 8.2; length of upper tooth-row 11.

Hab. Voi, British East Africa.

Type. Adult male. Field Mus. Nat. Hist. no. 16942.

This species is evidently closely allied to *fischeri*, from which it is distinguished by its rather smaller skull, greyer dorsal surface, and duller underparts.

(43) *Crocidura suahelæ*, Hell.

Crocidura suahelæ, Heller, Smith. Misc. Coll. vol. ix. no. 12, p. 6 (1912).

Allied to *voi*, but distinguished by its larger size and browner colour.

Size rather larger than in *fischeri*.

Colour above "uniform broccoli-brown, not sharply defined against the drab-grey of the underparts; hair everywhere slate-grey at base; lateral glands defined by a conspicuous line of white hairs; feet somewhat lighter than body, drab in colour; tail uniform in colour with the dorsum and clothed by short brown hair and scattered long white hairs on the basal two-thirds."

Dental characters the same as in *voi*, the unicuspid crushed together.

Dimensions of the type (as given by Heller) :—

Head and body 110 mm. ; tail 69 ; hind foot 16.

Skull : condylo-incisive length 26·5 ; greatest breadth 10·5 ; interorbital width 4·8 ; length of upper tooth-row 11·8.

Hab. Mazeras, British East Africa.

Type. Adult male. U.S. Nat. Mus. no. 181815.

The larger dimensions and browner colour distinguish this shrew from the *Voi* species. *Crocidura fischeri*, although possessing a skull nearly equal in length, has a much shorter tail and lighter underparts.

(44) *Crocidura smithi*, Thos.

Crocidura smithi, Thomas, Ann. & Mag. Nat. Hist. (6) vol. xvi. p. 51 (1895).

This form is distinguished at once by its very pale smoke-grey upperparts, white flanks, limbs, belly, and tail, and flat skull.

Size medium, hind foot from 11 to 12·5 mm. in length. Fur rather short, hairs of back 3 to 4 mm. in length.

Colour pale smoke-grey above, faintly tinged with pale cinnamon, the general effect about as in "pale neutral grey" sprinkled with "light drab." Flanks almost pure white, the grey hair-bases considerably less evident than on the back. Belly white, hairs white almost to the roots, only the extreme bases pale grey. Lateral gland small, marked by a streak of short white hairs. Backs of hands and feet white. Tail rather short, covered with short white hairs above and below ; bristle-hairs fairly numerous, evenly distributed over nearly the whole length of the tail, white in colour, but very slender and inconspicuous.

Skull smaller than in *fischeri*, brain-case very flat, recalling the flattened skulls of the *hildegardeae* group ; interorbital region more parallel-sided than in *hindei*, the posterior interorbital breadth rather narrower than usual. Teeth fairly large, especially the second upper incisors ; small upper unicuspid crushed closely together, the third partially hidden externally by the small anterior cusp of the large premolar, the cusp of the second is slightly longer vertically than that of the third, but otherwise the two teeth are almost equal in size. Last upper molar small and narrow.

Dimensions of the type (in spirit) :—

Head and body 64 mm. ; tail 31 ; hind foot 11 ; ear 7·5.

Skull : condylo-incisive length 20·8 ; greatest breadth 9 ;

least interorbital breadth 3·8; length of palate 8·6; post-palatal length 9; greatest maxillary breadth 6·7; median depth of brain-case 4; length of upper tooth-row 9·4.

Hab. Webi Shebeli, Somaliland.

Type. Adult male. B.M. no. 96. 8. 1. 1.

In the Collection is a further specimen of this striking species, obtained by Dr. Drake-Brockman at Armaleh, Somaliland; from this individual the colour-description given above has been taken, the type being preserved in spirit. A curious feature in connection with this skin is the extensive brownish staining on the flanks just above and below the lateral glands. The dimensions are rather greater than those of the type:—Head and body 66 mm.; tail 50; hind foot 12·5.

Group 9 (*turba* and *poensis*).

Size medium. Colour above blackish brown or dark reddish brown, below grey or brownish grey. Second and third upper unicuspid about equal in breadth.

(15) *Crocidura turba*, Dollm.

Crocidura turba, Dollman, Ann. & Mag. Nat. Hist. (8) vol. v. p. 176 (1910).

A medium-sized, very dark-coloured species, with hairy tail.

Size of hind foot between 14 and 15·5 mm. in length; tail about 48 mm. long.

General colour of dorsal surface dark seal-brown ("fuscous" or "fuscous black" sprinkled with "mummy-brown"), slightly paler on the flanks; hairs of back slate-grey, with long dark brown tips. Ventral surface silvery grey; hairs dark slate-coloured, with greyish-white tips. Backs of hands and feet brownish. Tail covered with short dark hairs, ventral surface usually rather lighter; caudal bristle-hairs grey in colour and fairly numerous.

Skull in general build less delicate than in the *fumosa* group; longer than in *fumosa* or *monax*, with narrow, rather high brain-case and long muzzle, considerably longer than in either *fumosa* or *monax*. Maxillary region, although not broad, more expanded than in *fumosa*. Cranial ridges more developed, the lambdoidal and sagittal sutures meeting further back than in *fumosa*, in which species the sutures are never raised up into prominent ridges, the skull even in old specimens being remarkably smooth, and the lambdoidal suture running considerably further forward before meeting

the sagittal suture. Tooth-row fairly long, second and third upper unicuspid narrow, oval in section, about equal in size, and the third slightly overlapping the second; cingula fairly well developed. In *fumosa* these teeth are very different, being broader, circular in section, and the third considerably larger than the second. Last upper molar smaller than in the *dolichura* or *fumosa* groups.

Dimensions of the type and three other specimens from the type-locality and adjacent districts:—

	Head and body.	Tail.	Hind foot.	Ear.
	mm.	mm.	mm.	mm.
♂ (type). Lake Bangweolo ..	96	48	15	10
♀. " " ..	91	47	15.5	10
♂. Kalungwisi	75	44	14	10
Chimpili Plateau	87.5	50	14.5	10

Skull-dimensions of type and another specimen from Northern Rhodesia:—

	♂ (type).	♂.
	mm.	mm.
Condyllo-incisive length	24	23.8
Greatest breadth	10	9.7
Least interorbital breadth	4.9	4.8
Length of palate	10	9.6
Postpalatal length	10.9	10.4
Greatest maxillary breadth	7	7
Length of upper tooth-row	10.1	10.1

Hab. Chilui Island, Lake Bangweolo. Altitude 3900 feet.

Type. Adult male. B.M. no. 9. 12. 4. 17.

(16) *Crocidura turba zaodon*, Osg.

Crocidura turba zaodon, Osgood, Field Mus. Nat. Hist. Publication 143 (Zool. Ser.), vol. x. no. 3, p. 21 (1910).

In size slightly larger than *turba*, darker in colour and with longer tail.

Tail about 60 mm. in length.

Colour of upperparts rich seal-brown ("fuscous" mixed with "olive-brown"); ventral surface browner, not silvery grey. Backs of hands and feet blackish brown. Tail long, blackish brown, sometimes rather paler below; caudal bristles grey in colour and conspicuous.

Skull a little larger, with heavier teeth.

Dimensions of the type (as given by Osgood):—

Head and body 98 mm.; tail 60; hind foot (c. n.) 18; ear 9.

Average measurements of ten topotypes :—

Head and body 99 (89-110) mm. ; tail 60 (56-65) ; hind foot (c. n.) 17 (16.5-18).

Skull of type: condylo-incisive length 24.3 ; greatest breadth 10.4 ; maxillary breadth 7.4 ; length of upper tooth-row 10.65.

A specimen in the Museum Collection from the Amala River has the following cranial dimensions:—Condylo-incisive length 24.7 mm. ; greatest breadth 10.2 ; least interorbital breadth 5.1 ; length of palate 10.3 ; postpalatal length 10.9 ; greatest maxillary breadth 7.5 ; length of upper tooth-row 10.7.

Hab. Nairobi, British East Africa.

Type. Adult male. Field Mus. Nat. Hist. no. 16929.

The darker colour and longer tail readily separate this East-African form from the Rhodesian *turba*.

(47) *Crocidura turba lakiunda*, Hell.

Crocidura turba lakiunda, Heller, Smith. Misc. Coll. vol. lx. no. 12, p. 6 (1912).

General proportions as in *zaodon*, but browner in colour.

Tail longer than in *turba* or *provocax*, equalling that of *zaodon*.

General colour of dorsal surface uniform vandyke-brown, underparts but slightly lighter, brownish, not grey. Tail and feet as in *zaodon*.

Skull slightly shorter than that of *zaodon*, smaller than in the average *provocax*.

Dimensions of the type (measured in the flesh) :—

Head and body 95 mm. ; tail 57 ; hind foot 15.5.

Skull: condylo-incisive length 22 ; greatest breadth 10 ; length of upper tooth-row 10.4.

Hab. Lakiundu River, near its junction with the Northern Guaso Nyiro, British East Africa.

Type. Adult female. U.S. Nat. Mus. no. 181816.

In the Museum Collection are three specimens which probably represent this race, one from the Northern Guaso Nyiro in the unbleached pelage and two from the Jombeni Range (Nyeri District, B.E.A.) in the old reddish-brown coat. The skin-dimensions of these three specimens are recorded as follows:—

	♀. N. Guaso Nyiro.	♀. Jombeni.	♀. Jombeni.
	mm.	mm.	mm.
Head and body	87	88	86
Tail	55	50	63
Hind foot	15.5	14	15

There seems little doubt that this race is very close to the Nairobi one, differing only in the rather browner tint of the pelage and slightly smaller skull.

(48) *Crocidura turba provocax*, Thos.

Crocidura turba provocax, Thomas, Ann. & Mag. Nat. Hist. (8) vol. vi. p. 112 (1910).

Allied to *zaodon*, but with shorter tail, about equal to that of *turba*.

Size of body and hind foot as in *turba*.

Colour of dorsal surface slightly darker than in the Rhodesian form, more as in *zaodon*, dark blackish brown ("fuscous" mixed with black), finely speckled with silvery and yellowish grey; ventral surface considerably browner, without the distinct silver-grey wash found in *turba*. Backs of hands and feet dirty brown. Tail as short as in *turba*, dark blackish brown above, a shade lighter below; caudal bristles fairly numerous, light grey in colour.

Skull rather broader than that of *turba*, but exactly the same in general build, the sagittal and lambdoidal sutures meeting in quite the same manner. Teeth slightly heavier, the large second incisor not so long horizontally.

Dimensions of the type and seven other specimens from the type-locality (measured in the flesh):—

	♂ (type).	♂.	♂.	♂.	♂.	♀.	♀.	♀.
	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.
Head and body ..	96	99	101	87	96	85	92	93
Tail	51	49	49	45	49	48	..	49
Hind foot	15·5	14·5	15·5	15·5	15·5	15·5	14·5	15·5
Ear	10·5	8·5	8·5	10·5	10·5	10	9·5	9·5

Skull: dimensions of the type and five other adults:—

	♂ (type).	♂.	♂.	♀.	♀.	♀.
	mm.	mm.	mm.	mm.	mm.	mm.
Condylar-incisive length	24·2	23·6	24	24·2	24·5	23·8
Greatest breadth	10·3	10·2	10·1	10·1	9·9	10·2
Least interorbital breadth	5	5	5	4·8	5	4·9
Length of palate	9·8	9·8	10	10·2	10·2	9·6
Postpalatal length	10·6	10·4	10·5	10·4	10·9	10·8
Greatest maxillary breadth	7·6	7·4	7·3	7·4	7·5	7·4
Length of upper tooth-row	10·4	10·3	10·5	10·5	10·6	10·1

The sexes in *provocax* would not appear to differ from each other as regards size.

Hab. Aberdare Mts., British East Africa. Altitude 11,000 feet.

Type. Adult male. B.M. no. 10. 5. 3. 25.

From *zaodon* this Aberdare race may be distinguished by its shorter tail; the rather darker colour, brownish belly, and light speckling on the back are the chief colour-differences which separate *provocax* from true *turba*.

(49) *Crocidura turba kempii*, subsp. n.

Closely allied to *provocax*, paler in colour and with smaller teeth.

General proportions as in *provocax*.

General colour olive-brown ("olive-brown"), lighter than in the Aberdare race and not exhibiting the silvery-grey speckling to such a marked extent: ventral surface greyer ("neutral grey"), more as in true *turba*. Extremities and tail similar to those of *provocax*.

Skull rather smaller than that of *provocax*, *zaodon*, or *lakiunda*; narrower and with rather smaller teeth, more as in *turba*.

Dimensions of the type and four other specimens (measured in the flesh):—

	Head and body. mm.	Tail. mm.	Hind foot. mm.	Ear. mm.
♂	94	50	15	9
♀	100	55	15	9
♀	89	53	15	10·5
♀	88	56	15·5	10·5

Skull: dimensions of type and three adults:—

	♂ (type). mm.	♂. mm.	♀. mm.	♀. mm.
Condylar-incisive length	22·1	22·7	23·4	22·3
Greatest breadth	9·5	9·5	9·7	9·6
Least interorbital breadth	4·9	4·9	4·9	4·7
Length of palate	9·5	9·3	9·8	9·8
Postpalatal length	9·7	10·5	10·5	9·8
Greatest maxillary breadth	7·1	7·2	7·4	7·1
Length of upper tooth-row	9·5	9·8	10·2	10·1

Hab. Kirni, Mt. Elgon. Altitude 6000 feet.

Type. Adult male. B.M. no. 10. 4. 1. 40. Original number 290. Collected on September 17th, 1909, by Mr. R. Kemp, and presented by C. D. Rudd, Esq.

Mr. Kemp collected in all six specimens of this Elgon race at altitudes of from 5000 to 6000 feet.

The rather paler colour, absence of prominent silver-grey speckling, and slightly smaller skull seem to indicate that this Elgon shrew should be considered as distinct from the Aberdare race.

(50) *Crocidura turba tarella*, subsp. n.

Allied to *provocax*, rather greyer in colour, with much more prominent silver speckling and slightly heavier teeth.

Proportions of body as in *provocax*, tail rather longer.

General colour dark brownish grey (between "fuscous" and "sepia"); silver-grey or buff speckling very conspicuous both on back and flanks. Underparts more silvery than in *provocax*. Hands and feet, as in most of the *turba* group, brownish, the outer sides of the extremities darker than the inner. Tail rather longer than in *provocax*, of the same colour.

Skull larger than that of *turba*, with heavier teeth; compared with *provocax* the skull appears of very much the same size, the teeth slightly larger.

Dimensions of type and seven other adult specimens:—

	Head and body.	Tail.	Hind foot.	Ear.
	mm.	mm.	mm.	mm.
♂ (type)	91	57	17	9.5
♂	95	50	15	10
♂	84	53	15	9
♂	100	53	17	10
♂	94	55	15.5	8
♂	84	54	15.5	9.5
♂	89	56	16	9
♀	100	58	15.5	9.5

Skull: dimensions of type and three other adult specimens:—

	♂ (type).	♂.	♀.	♀.
	mm.	mm.	mm.	mm.
Condylar-incisive length	24.5	24.3	24.1	24.5
Greatest breadth	10.4	9.9	10.5	10.3
Least interorbital breadth	5	4.9	5	4.7
Length of palate	10.1	10.2	9.7	10.1
Postpalatal length	10.9	10.4	10.8	10.9
Greatest maxillary breadth	7.6	7.5	7.5	7.4
Length of upper tooth-row	10.9	10.8	10.3	10.6

Hab. Chaya, near Ruehuru, Congo Belge.

Type. Adult male. B.M. no. 11. 12. 3. 52. Original number 2286. Collected by Mr. R. Kemp on June 19th, 1911.

This race would seem to be fairly well distributed over Southern Uganda and the adjoining Congo districts. Mr. Kemp obtained it at the following localities:—Kiduha (Lake Mutanda), Kagambah, Kigezi, Nalasanji, and Mbarara (Uganda), and at the type-locality.

The greyer colour and more abundant silver-grey speckling and lighter underparts are the chief external characters that serve to distinguish this race from the Aberdare *provocax*. The Rhodesian *turba* is still more easily distinguished, as in that form there is hardly any light grey speckling and the teeth are considerably smaller and tail shorter.

(51) *Crocidura turba angolæ*, subsp. n.

A very dark shrew, almost black.

Size rather smaller than in *turba*, tail shorter. Fur fairly long, hairs on back 6·8 mm. in length.

General colour very dark, darker than in any other African *Crocidura*, near "fuscous black" mixed with "black." Flanks slightly paler, the colour gradually becoming greyer towards the ventral surface, belly much as in *turba* ("smoke-grey"), with a silvery streak down the mid-line. Backs of hands and feet dark brown. Tail short and thickly haired, dark blackish brown above, below slightly paler near the base; bristle-hairs dark, with greyish tips, very numerous.

Skull and teeth much as in *turba*.

Dimensions of the type (measured from dry skin):—

Head and body 80 mm.; tail 32; hind foot 12·5.

Skull (occipital region broken): least interorbital breadth 4; greatest maxillary breadth 7; length of palate 9·3; length of upper tooth-row 10.

Hab. Bailundu Country, Angola.

Type. Adult female. B.M. no. 5. 10. 1. 4. Original number 8. Collected by Mr. C. H. Pemberton, and presented to the British Museum by the Hon. Walter Rothschild, F.R.S.

The darker colour and shorter tail readily distinguish this Angolan shrew from the rest of the *turba* group.

(52) *Crocidura turba mutesæ*, Hell.

Crocidura mutesæ, Heller, Smith. Misc. Coll. vol. lvi. no. 15, p. 3 (1910).

Most nearly allied to the foregoing race, rather larger, with heavier teeth, and brownish in colour.

Size of body rather large, tail as long as in *zaodon*.

General colour of upper parts "mummy-brown," feet and tail darker seal-brown; ventral surface greyish, with a wash of broccoli-brown. Lateral glands rather more distinct than in the other races, marked by a narrow streak of short, light brownish hairs.

Dimensions of type (as given by Heller):—

Head and body 115 mm.; tail 64; hind foot 16 (measured dry).

Skull: condylo-incisive length 25·5; greatest breadth 11·2; length of upper tooth-row 11·3.

Hab. Kampala, Uganda.

Type. Adult female. U.S. Nat. Mus. no. 174636.

The larger skull and teeth, rather longer tail, and more brownish coloration distinguish this Kampala race from *t. tarella*. The only specimen in the Museum Collection which appears to be *mutescæ* comes from Entebbe; it agrees quite closely with Heller's description of the general colour, but is rather smaller.

(53) *Crocidura nilotica*, Hell.

Crocidura nilotica, Heller, Smith. Misc. Coll. vol. lvi. no. 15, p. 3 (1910).

A dark clove-brown form with short tail and small teeth.

Size of body about as in *t. provocax*; tail as short as in *turba*. Pelage not quite so long as in *t. provocax*. Colour of upper parts dark clove-brown, underparts slaty brown; but little higher than back. Feet and tail coloured like rest of dorsal surface, caudal bristles light brown.

Skull a little smaller than in *t. provocax*, with smaller teeth.

Dimensions of type (as given by Heller):—

Head and body 92 mm.; tail 48; hind foot 14·5.

Skull: condylo-incisive length 23; greatest breadth 10; length of upper tooth-row 9·5.

Hab. Lado Enclave.

Type. Adult female. U.S. Nat. Mus. no. 164638.

In his account of this species Heller mentions that further specimens were obtained at Butiaba, Hoima, and Kabula Muliro, in Uganda. There seems little doubt but that *nilotica* is a very close ally of the *turba* group.

(54) *Crocidura zena*, sp. n.

Larger than *turba*, with much larger hind feet and tail.

General colour rather darker than that of *turba* (between "fuscous black" and "aniline-black"), ventral surface browner, the hair-tips brown or grey. Hands and feet very large, strikingly darker on their outer sides and two outer

digits*. Tail considerably longer than that of *turba*, dark blackish brown above, below a shade lighter; caudal bristles not so numerous.

The skull is unfortunately badly broken, the brain-case being entirely destroyed; teeth heavier than in *turba*, third upper unicuspid broader and more circular in section, last upper molar larger.

Dimensions of the type (measured in the flesh):—

Head and body 94 mm.; tail 63.5; hind foot 17; ear 10.

Skull: least interorbital breadth 5; length of palate 10.1; greatest maxillary breadth 7.2; length of upper tooth-row 10.6.

Hab. Chilui Island, Lake Bangweolo.

Type. Adult male. B.M. no. 9. 12. 4. 21. Original number 142. Collected by S. A. Neave, Esq.

This shrew was found by Mr. Neave on the same island upon which he obtained the type of *turba*; the great difference in the size of the hind feet and the length of the tail clearly show that these two specimens cannot represent the same species, and it thus becomes necessary to bestow a specific name upon the larger specimen. In general proportions of body and tail this shrew might easily be confused with some of the British East African forms of *turba*.

(55) *Crocidura ansorgei*, sp. n.

Intermediate between the *turba* and *poensis* groups.

Size slightly larger than in *turba*, about equal to *zenu* or *soricoides*. Fur as in *turba*.

Colour above considerably paler and greyer than in either *turba* or *poensis*, about like "olive-brown" mixed with "mummy-brown"; flanks a trifle lighter, the brownish tint gradually fading and merging imperceptibly into the dull greyish brown ("deep neutral grey" washed with "light drab") of the ventral surface; hairs of belly slate-grey with pale brownish tips. Backs of hands and feet brownish white. Tail long, more finely haired than in *turba*, more as in *soricoides*, slate-brown above, paler below; bristle-hairs slender and fairly numerous on the basal half, but not nearly so conspicuous as in *turba*.

Skull a trifle smaller and narrower than that of *soricoides*, shape of brain-case more as in *turba*, but muzzle rather blunter. Teeth like those of the Bangweolo species, second and third upper unicuspid a trifle broader and shorter.

* This feature, although present in some of the races of *turba*, is never so conspicuous as in *zenu*.

Dimensions of the type (measured in the flesh) :--

Head and body 98 mm. ; tail 59 ; hind foot (measured dry) 16 ; ear 8.

Skull of type and a male specimen from Benguela : condylo-incisive length 23·9, 23·7 ; greatest breadth 10, 10 ; least interorbital breadth 4·9, 4·6 ; length of palate 10, 10 ; postpalatal length 11, 10·6 ; greatest maxillary breadth 7·3, 7·5 ; median depth of brain-case 5·9, 6 ; length of upper tooth-row 10·6, 10·5.

Hab. Duque de Braganca, Angola.

Type. Adult female. B.M. no. 4. 4. 9. 29. Original number 156. Collected by the late Dr. W. J. Ausorge.

There is a second specimen of this new shrew in the collection, the skull-dimensions of which are given above. It agrees fairly closely with the type in general body-measurements (head and body 85 mm. ; tail 65 ; hind foot 16·5 ; ear 10).

The exact affinities of this species are somewhat difficult to decide ; for the present it seems most convenient to regard it as intermediate between the *turba* and *poensis* groups. From *turba* it is distinguished by its paler colour, longer, less hairy tail, and rather larger hind feet ; *zena*, the other Bangweolo species, is very much darker in colour, both above and below. *Crocidura p. soricooides* possesses a larger skull, broader and flatter brain-case, and is considerably browner in colour. *Crocidura nigricans*, from Angola, is a much smaller animal (head and body 70 mm. ; tail 52 ; hind foot 12).

(56) *Crocidura poensis*, Fraser.

Sorex (Crocidura) poensis, Fraser, P. Z. S. p. 200 (1842).

A medium-sized, dark brown-coloured species.

The upper parts are described as " of a deep brown colour, rather indistinctly variegated with greyish " ; the body beneath is " grey, but slightly washed, as it were, with dirty yellow." In the Museum Collection there are four specimens from Fernando Po which may be accepted as representing Fraser's species ; the colour of the new unworn pelage is considerably greyer than in the bleached phase, about as in " fuscous " ; in the bleached state the coat is much browner and redder, near " Prout's brown." Flanks rather greyer, the brownish tint gradually passing into the grey of the belly. Ventral surface pale slaty grey (" neutral grey ") ; in the worn coat the colour of the belly is considerably browner (" neutral grey " suffused with " drab ").

Backs of hands and feet more markedly bicolour than in any of the East African forms (excepting *zena*), outer sides dark sepia, inner portions reddish brown. Tail fairly long and finely haired, dark brown above, a trifle paler below; bristle-hairs numerous, but not very conspicuous.

Skull rather short with blunt muzzle; brain-case broad and a little flattened, but not markedly so. Teeth all rather heavy, third upper unicuspid slightly larger than and overlapping second.

Dimensions of the type (as given by Fraser):—

Head and body 3 in. 3 lin.; tall 1 in. 10 lin.; hind foot 6 lin.

The Museum specimens show rather greater measurements for the hind feet:—

	Head and body.	Tail.	Hind foot.	Ear.
	mm.	mm.	mm.	mm.
♂	86	53	15	11
♀	76	48	15	10

Skull of female specimen: condylo-incisive length 22·9; greadth breadth 9·8; least interorbital breadth 4·7; length of palate 10; postpalatal length 10·5; greatest maxillary breadth 7·2; median depth of brain-case 5·4; length of upper tooth-row 10.

In another specimen the tooth-row measures 10·6 mm. in length.

Hab. Clarence, Fernando Po.

(57) *Crocidura poensis soricoïdes*, Murray.

Rhinomys soricoïdes, Murray, Proc. Roy. Phys. Soc. Edinb. p. 159 (1859-60).

Closely allied to *poensis*, but distinguished by its larger skull.

Murray's type, which is preserved in the British Museum, is unfortunately in a very faded condition; it is evident, however, that the colour was very similar to that of *poensis*. A more recently collected specimen from Agberi, Southern Nigeria, may be taken as representing this form; the colour above is dark vandyke-brown ("clove-brown" mixed with "mummy-brown"), profusely sprinkled with golden buff, the flanks a trifle greyer and speckled with silver, the colour fading gradually into the greyish brown of the belly. Backs of hands and feet brown. Tail as in *poensis*.

Skull larger, with larger, more parallel-sided brain-case. Teeth all larger; third upper unicuspid slightly broader than second, and overlapping it, as in *poensis*.

Approximate dimensions of the type (taken from dry skin):—

Head and body 75 mm.; tail 59; hind foot 15.

Dimensions of three spirit-specimens:—

	Head and body. mm.	Tail. mm.	Hind foot. mm.
♀. Lagos	80	61	16
♀. Old Calabar	80	50	14·2
♀. Niger	79	61	15

Skull of type (broken) and topotype (♀): condylo-incisive length —, 25; greatest breadth —, 10; least inter-orbital breadth 4·8, 4·3; length of palate 10·4, 10·6; post-palatal length —, 11·3; greatest maxillary breadth 7·2, 7·7; median depth of brain-case —, 5·7; length of upper tooth-row 11, 11.

Hab. Old Calabar, Southern Nigeria.

Type. Adult. B.M. no. 63. 12. 17. 6.

The larger size of the skull separates this mainland form from Fraser's *poensis*.

(58) *Crocidura poensis attila*, subsp. n.

Smaller than *soricoides* or *poensis*, with lighter under surface more distinctly marked off from dorsum.

Size rather smaller than the Fernando Po specimens in the Collection.

Colour of new coat dark sepia-brown above, near "fuscous" mixed with "clove-brown"; slightly paler on the flanks, the colour passing rather abruptly into the pale greyish tint of the ventral surface ("light neutral grey" mixed with "light drab"). In the worn phase the coat is rather redder in colour ("bistre"). Lateral gland silvery white. Extremities as in *poensis*. Tail dark sepia-brown above, paler below, clothed in very fine hairs, appearing almost naked except for the bristle-hairs which are fairly numerous and greyish in colour.

Skull smaller than that of *poensis* or *soricoides*, with narrower brain-case and muzzle. Teeth conspicuously smaller, third upper unicuspid a little broader than second, and slightly overlapping it.

Dimensions of the type and three topotypes (measured in the flesh):—

	Head and body. mm.	Tail. mm.	Hind foot. mm.	Ear. mm.
♂. (Type) ..	80	48	14	10
♂	90	55	14	11
♀	80	50	12	10
♀	80	45	13	10

Skull-dimensions of type and paratype (σ): condylo-incisive length 21, 21·7; greatest breadth 9, 9·3; least interorbital breadth 4·3, 4·5; length of palate 8·9, 9·2; postpalatal length 9·1, 9·5; greatest maxillary breadth 6·8, 6·7; median depth of brain-case 4·9, 5; length of upper tooth-row 9·1, 9·4.

Hab. Bitye, South Cameroons. Altitude 2000 feet.

Type. Adult male. B.M. no. 14. 7. 23. 9. Original number 713. Collected by Mr. G. L. Bates on December 3rd, 1913.

The smaller-sized skull, smaller teeth, and lighter ventral surface distinguish this Cameroon race from both *poensis* and *soricoides*.

(59) *Crocidura poensis pamela*, subsp. n.

Size about as in *poensis*, tail shorter, and colour considerably duller.

General colour of dorsal surface dull brown ("olive-brown"), very thickly sprinkled with golden buff. Flanks a little greyer, the brown colour gradually merging into the greyish buff of the ventral surface ("neutral grey" suffused with "drab"). Extremities as in *poensis*. Tail short and appearing almost naked, sparsely clothed in very fine short hairs, blackish above, pale brown below; bristle-hairs very few and inconspicuous, not spreading more than halfway down the tail.

Skull about equal to that of *poensis*; brain-case similar in size, but more angular, suggesting the square-angled cranium of the *luna* group. Teeth as in *poensis*.

Dimensions of the type (measured in the flesh):—

Head and body 83 mm.; tail 35; hind foot 13; ear 8.

Skull: condylo-incisive length 22·7; greatest breadth 10·1; least interorbital breadth 4·7; length of palate 9·5; postpalatal length 9·7; greatest maxillary breadth 7; median depth of brain-case 5·6; length of upper tooth-row 10.

Hab. Bibianaha, Gold Coast.

Type. Adult male. B.M. no. 11. 1. 11. 3. Original number 35. Collected on December 11th, 1910, by Dr. H. G. F. Spurrell and presented by him to the National Collection.

A specimen presented by F. Russell Roberts, Esq., collected in the French Gambia, appears also to belong to this form; the colour is very like that of the type and the general dimensions much the same, the tail-measurement being 40 mm.

The duller colour and shorter tail distinguish this race from *poensis*, *soricoides*, and *attila*.

(60) *Crocidura batesi*, sp. n.

In size rather larger than in *poensis* group, distinguished by its very dark colour, large teeth, and almost naked tail.

Fur about as in *poensis*.

Colour above dark blackish brown, near "fuscous" mixed with "clove-brown" and "blackish brown (1)"; a slight amount of buff speckling visible in certain lights. Ventral surface but very little lighter, "deep neutral grey" washed with "Saccardo's umber." Backs of hands and feet brownish. Tail long and appearing almost naked, clothed with very short, fine, dark hairs, blackish brown above, a shade paler below; bristle-hairs very inconspicuous, a few present on the basal portion only, recalling the condition found more markedly in the *dolichura* group.

Skull larger than in *poensis* or *soricoides*, brain-case considerably higher, but not as large as in *occidentalis*.

Dimensions of the type and a female specimen from the Ja River:—

Head and body 105, 95 mm.; tail 65, 54; hind foot 16, 15; ear 10, 8.

Skull (badly broken): length of palate 10·2; greatest maxillary breadth 8; length of upper tooth-row 12.

Hab. Como River, Gaboon. Sea-level.

Type. Adult male. B.M. no. 97.7.1.4. Original number 168. Collected on March 26th, 1897, by Mr. G. L. Bates.

In the Museum Collection, besides the type and the Ja River specimen mentioned above, there are two subadult individuals, preserved in spirit, from the Benito River (French Congo) and Efulen (Cameroons). All these specimens agree in the scarcity of the caudal bristle-hairs and the darkness of the general colouring.

(61) *Crocidura fozzi*, sp. n.

Paler and greyer than *soricoides*.

Size about as in the Calabar species.

Colour of dorsal surface snuff-brown mixed with grey ("drab" speckled with "neutral grey"), considerably greyer and paler than in *soricoides*. In the worn pelage the colour is rather richer ("sepia" speckled with grey and buff). Flanks rather greyer, the brownish tint gradually

passing into the dull slate-grey of the ventral surface, which varies in colour from "pale smoke-grey" in the new coat to "light greyish olive" in the worn phase; hairs of belly with slaty bases and greyish-white tips, the general effect paler and greyer than in *soricoides*. Backs of hands and feet brownish. Tail rather more coarsely haired than in *poensis* or *soricoides*, dark brownish black above, rather paler below; bristle-hairs greyish, fairly numerous, and conspicuous.

Skull about equal in size to that of *soricoides*, muzzle rather blunter and brain-case more inflated, shaped more as in the Gold Coast race of *poensis*, described above. Teeth about equal in size to those of *soricoides*, third upper unicuspid rather broader than second, and slightly overlapping it.

Dimensions of the type (measured in the flesh):—

Head and body 98 mm.; tail 61; hind foot 16; ear 12.

Skull: condylo-incisive length 24.8; greatest breadth 10.5; least interorbital breadth 4.8; length of palate 10.8; postpalatal length 10.6; greatest maxillary breadth 7.6; median depth of brain-case 6.2; length of upper tooth-row 11.

Hab. Panyam, Northern Nigeria. Altitude 4000 feet.

Type. Adult male. B.M. no. 11. 3. 24. 7. Original number 5. Collected and presented by the late Rev. G. T. Fox.

A second specimen, a female from the type-locality, agrees very closely with the type in general colour and dimensions.

This shrew is easily distinguished from *soricoides* and the other races of *poensis* by its much paler and greyer colour.

Group 10 (*arethusia* and *erica*).

Size medium. Colour above cold grey washed with cinnamon or brown. Second and third upper unicuspid about equal in size; last upper molar very small.

(62) *Crocidura arethusia*, sp. n.

Smaller than *foxi* and greyer in colour.

Hind foot only 14 mm. in length. Fur rather short, hairs of back 3-4 mm. long.

Colour of dorsal surface pale cinnamon-brown mixed with grey, about as in "mouse-grey" speckled with "mummy-brown"; flanks a trifle greyer, the brownish tint passing abruptly into the greyish white of the ventral surface, the demarcation much sharper than in *foxi* or any of the

poensis group. Underparts considerably lighter, almost white ("pale neutral grey"). Backs of hands and feet dirty white. Tail shorter and more finely haired, drab-brown above, whitish below; bristle-hairs greyish white, very numerous, and conspicuous.

Skull rather smaller and narrower, with flatter and smaller brain-case. Teeth very similar, excepting the last upper molar, which is markedly smaller.

Dimensions of the type (measured in the flesh):—

Head and body 80 mm.; tail 49; hind foot 14; ear 9.

Skull (occipital region broken): basal length 20·7; greatest breadth 9·9; least interorbital breadth 4·1; length of palate 10·2; postpalatal length 10·4; greatest maxillary breadth 7·4; median depth of brain-case 5·1; length of upper tooth-row 10·6.

Hab. Kabwir, Bauchi Province, Northern Nigeria. Altitude 2500 feet.

Type. Adult female. B.M. no. 14. 11. 8. 2. Original number 68. Collected on August 27th, 1914, by Dr. J. C. Fox and presented by him to the British Museum.

The smaller size, paler colour, flatter skull, and smaller last upper molar separate this form from the other North Nigerian species, *foxi*.

(63) *Crocidura erica*, sp. n.

Allied to *arethusa*, but distinguished by its greyer colour, longer, less hairy tail, and flatter skull.

Colour above pale dove-grey faintly washed with brownish cinnamon, the general effect "hair-brown" finely speckled with pale "mummy-brown," greyer and paler than in *arethusa*; flanks somewhat greyer, the brownish tint gradually merging with the dull grey of the underparts; belly duller and greyer than in the Kabwir species, more as in *foxi* (near slate-grey washed with "mouse-grey"). Backs of hands and feet dirty white. Tail long, very finely haired, drab-brown above, dirty white below; bristle-hairs few in number, short and greyish white in colour, confined to basal half of tail.

Skull smaller than in *soricoides* and much flatter, about equal to that of *arethusa*, but with flatter brain-case. Teeth fairly heavy, upper unicuspid large, the second not smaller than the third. Last upper molar as small and narrow as in *arethusa*.

Dimensions of the type (measured in the flesh):—

Head and body 96 mm.; tail 54; hind foot 15; ear 8.

Skull of type and topotype (♀): condylo-incisive length

23·3, 22·4; greatest breadth 10·2, 9·7; least interorbital breadth 4·8, 4·5; length of palate 10, 10; postpalatal length 10·6, 10; greatest maxillary breadth 7·2, 7; median depth of brain-case 4·9, 4·8; length of upper tooth-row 10·3, 10·2.

Hab. Pungo Andongo, Angola. Altitude 3600 feet.

Type. Adult male. B.M. no. 4.4.9.30. Original number 30. Collected by the late Dr. W. J. Ansorge.

This species would appear to be most nearly allied to the Nigerian *arethusa*, agreeing with it in general dental characters, but distinguished by its duller upper parts, darker belly, longer and less hairy tail, and flatter skull. *Crocidura luna*, which this species somewhat resembles in colour, is at once distinguished by its much broader skull, with higher and squarer brain-case, and the larger size of the last upper molar.

[To be continued.]

XX.—*New African Rodents and Insectivores, mostly collected by Dr. C. Christy for the Congo Museum.* By OLDFIELD THOMAS.

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DURING the absence of Mr. Dollman in the service of his country I have been entrusted with the examination of the magnificent collection of mammals made by Dr. Cuthbert Christy on the upper waters of the Ituri and Welle during the past two years for the Congo Museum at Tervueren. Although, as might be expected, the majority of the species are similar to those of Ruwenzori and Uganda to the east, and the Cameroons on the west, a certain number are new, and by the kind permission of the Belgian authorities I am authorized to publish short descriptions of them in the 'Annals.' A full list of the collection will, it is hoped, be issued later in the Congo Museum Journal.

Notes on the first instalment of the collection were published last year by Mr. Dollman*.

Funisciurus anerythrus bandarum, subsp. n.

General characters of *F. anerythrus*, but paler, and more such as might be expected in a less heavily forested country. Upper colour, as compared with the "dull greyish olive" of

* Rev. Zool. Africaine, iv. p. 75.